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ABSTRACT

A study involving 48 school-identified learning disabled (LD) and 96 nonLD elementary students investigated the numbers of students identified by three kinds of LD definitions: ability-achievement discrepancy, low achievement, and scatter. Relationships between each definition and actual school classification were also examined. Data from a battery of psychoeducational tests were used to classify each child as LD or nonLD according to each of 14 operational definitions. Results indicated that various definitions of LD identify significantly different numbers of students. Percentages of students identified ranged from 5.3 to 69.6, with a median of 29.5. The three categories of definitions did not discriminate LD and nonLD children consistently. Within the study's limitations, the authors predict continued confusion in the field of LD. (Author/CL)

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PUBLIC-POLICY IMPLICATIONS OF DIFFERENT DEFINITIONS OF LEARNING DISABILITIES

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Abstract

There have been many proposed definitions of learning disabilities (LD) and efforts to operationalize these definitions since the category was first established. To date, there has been little agreement on either the definition of learning disabilities or the criteria that should be used to identify LD students. The purpose of this study was to examine the numbers of students identified by three kinds of definitions: ability-achievement discrepancy, low achievement, and scatter. The relationships between each definition and actual school classification also were examined. Subjects were 48 school-identified LD children and 96 non-LD children. Both samples had previously been administered a battery of psychoeducational tests. These data were used to classify each child as LD or non-LD according to each of 14 operational definitions. The results indicated that various definitions of learning disabilities identify significantly different numbers of students. Percentages of students identified ranged from 5.3 to 69.8, with a median of 29.5. The three categories of definitions did not discriminate LD and non-LD children consistently. Within the limitations of the present study, the prognosis is for continued confusion in the field of learning disabilities. Implications and recommendations for the educational system as well as for public policy are discussed.

Public-Policy Implications of Different Definitions of Learning Disabilities

The number of students identified as learning disabled (LD) in the public schools has increased dramatically in recent years to the point where, in the 1979-1980 school year, 144,423 students were served (USOE, 1980). Ten years ago, only .2% of the school population was classified as LD. By 1977, the figure had soared to 5.2%. Tucker (1980) reported that in one state, the percentage of students in special education identified as LD rose to almost 44% between 1970 and 1977. Such rapid increases largely have been a function of social pressures for provision of services to increasing numbers of students who experience academic difficulty and of efforts to assign less stigmatizing labels to students. As the diagnosis of minorities as mentally retarded became more controversial, more and more minority students who posed problems for regular-classroom teachers were placed in the more socially desirable category of learning disabilities (Tucker, 1980). In addition, parents became interested in finding reasons for their child's poor school performance and in soliciting help for their "otherwise normal" son or daughter.

Despite the increasing numbers of students being declared eligible for LD services and the implicit appeal of the term (see Divoky, 1974, Hobbs, 1975), there is little agreement on the definition of learning disabilities. Vaughan and Hodges (1973) reported as many as 38 different definitions, and Mercer, Forgnone, and Wolking (1976), in a survey of 42 state departments of education, found considerable variation in state definitions. For example, some of the states specified that IQ had to be above the mentally retarded

range while others stated that IQ had to be average or above. In addition, Thurlow and Ysseldyke (1979) reported that Child Service Demonstration Centers for LD students ("model" programs established by the U.S. Office of Education) varied considerably in how students within those programs were identified as having learning disabilities. This variability in definitions no doubt produces differences in the numbers of students who are identified. The wide range in estimates of the prevalence of learning disabilities in the school population (from 1% to 30%, Lerner, 1976; from 0% to 70%, Tucker, Stevens, & Ysseldyke, 1982) clearly reflects the lack of agreement about how to define and operationalize learning disabilities.

Considering the many definitions of learning disabilities that have been developed, a careful examination of the numbers of students actually identified by these definitions is necessary. In the present research, the extent to which 48 school-identified LD students and 96 non-LD students were classifiable as LD according to 14 operational definitions was investigated.

Method

LD Subjects

The school-identified LD sample included 48 students whose mean age was 9 years, 3 months (SD = 1 year, 5 months). The sample included 36 males (75%) and 12 females (25%). Mean aptitude and achievement scores were as follows: WISC-R Full Scale, 98.98 (SD = 11.44); Woodcock-Johnson Broad Cognitive Ability, 94.70 (SD = 11.15); Woodcock-Johnson Reading Achievement, 84.66 (SD = 7.96); Woodcock-Johnson Mathematics Achievement, 88.82 (SD = 12.69); and

Peabody Individual Achievement Test (PIAT) total score, 93.06 (SD = 8.38). (See Epps, Ysseldyke, & Algozzine, 1982, for additional aptitude and achievement data.) This sample was made up of two subsamples selected on the basis of different criteria.

Subsample 1. Subjects were 24 fourth graders from metropolitan Minneapolis and St. Paul schools. The subsample included 19 boys and 5 girls with a mean age of 10 years, 1 month (SD = 5 months). They were identified as learning disabled by placement teams in the school districts they attended. The exact criteria for identification of subjects as LD used by the schools were unknown. The LD subsample was selected for participation within six months of their identification as learning disabled in order to reduce the effect of the intervention.

Subsample 2. Subjects were 24 elementary-school students referred for psychological evaluation due to learning difficulties in a school district in northern Minnesota. The subsample included 17 boys and 7 girls with a mean age of 8 years, 5 months (SD = 19 months). Students were diagnosed as LD by the school district's application of the "severe-deficit" criterion from the Woodcock-Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977).

Non-LD Subjects

The non-LD sample included 96 students whose mean age was 10 years, 0 months (SD = 1 year, 3 months). No sex data were available for two of the four non-LD subsamples. Mean aptitude and achievement scores were as follows: WISC-R Full Scale, 102.78 (SD = 19.93),

Woodcock-Johnson Broad Cognitive Ability, 100.50 (SD = 12.17); Woodcock-Johnson Reading Achievement, 98.21 (SD = 11.55); Woodcock-Johnson Mathematics Achievement, 99.10 (SD = 15.97); and Peabody Individual Achievement Test (PIAT) total score, 101.97 (SD = 10.01). (See Epps et al., 1982, for additional aptitude and achievement data.) This sample was made up of four subsamples selected on the basis of different criteria.

Subsample 1. This subsample consisted of 24 low-achieving fourth graders from the same metropolitan area from which the LD subsample 1 was selected. Subjects included 16 boys and 8 girls with a mean age of 10 years, 1 month (SD = 4 months). They had not been identified as LD by their school districts, but scored at or below the 25th percentile on the Iowa Tests of Basic Skills administered during the fall of the school year. This low-achieving subsample also had been group tested within six months of their selection for participation.

Subsample 4. Subjects were 24 elementary-school students referred for psychological evaluation in the same northern Minnesota school district from which the LD subsample 2 was selected. The sample included 13 boys and 11 girls with a mean age of 9 years, 6 months (SD = 23 months). Students were declared ineligible for LD services by the school district's application of the "severe-deficit" criterion from the Woodcock-Johnson Psycho-Educational Battery.

Subsample 5. Subjects were 24 third-grade children in regular classrooms who were randomly selected from 12 elementary schools in a school district comprised of several northern Minneapolis suburbs. The number of boys and girls in the sample was unspecified; the mean

age of the group was 9 years, 4 months (SD = 6 months). The students were a subsample of a group included in criterion-related validity studies for the Woodcock-Johnson Psycho-Educational Battery.

Subsample 6. Subjects were 24 fifth-grade children in regular classrooms who were randomly selected from 12 elementary schools in the same district from which subsample 5 was selected. The number of boys and girls in the sample was unspecified; the mean age of the group was 11 years, 2 months (SD = 4 months). These students also were included in criterion-related validity studies for the Woodcock-Johnson Psycho-Educational Battery.

Procedure

Assessment data were collected for all subsamples as part of larger studies conducted by the Institute for Research on Learning Disabilities at the University of Minnesota. Subjects in subsamples 1 and 3 were tested from January to May of 1979 by trained graduate students. Subjects in subsamples 2 and 4 were tested during the 1979-1980 school year by certified school psychologists within the school district as part of the diagnostic assessment. Subjects in subsamples 5 and 6 were tested in April and May of 1976. The technical manual (Woodcock, 1978) for the Woodcock-Johnson did not identify testing personnel for these students.

Definitions

Fourteen different operationalizations of the definition were selected from those appearing in the professional literature. Ten operational definitions were grouped into three major categories: (a) ability-achievement discrepancy, (b) grade placement-achievement

discrepancy (i.e., low achievement), and (c) severe. Specific operational definitions used to determine classification as LD or non-LD are described below.

Ability-achievement discrepancy. Six forms of ability-achievement discrepancy definitions were used.

Definition 1 was the 1976 federal formula for severe discrepancy level. The precise formula for determining the presence of a severe discrepancy was as follows:

$$SA\left(\frac{IQ}{100} * 0.67\right) - 2.5 * \text{severe discrepancy level (SDL)}$$

If a student's academic achievement level was at or below the "severely delayed" (SD) on at least one measure, even the student was classified as LD. Achievement grade scores for WJ Mathematics, WJ Written Language, PIAT Mathematics, PIAT Reading Recognition, PIAT Reading Comprehension, and PIAT Spelling were used.

Definitions 2-4 were various forms of the 1977 federal definition for severe discrepancy. Since the 1977 federal definition did not specify the amount of discrepancy between ability and achievement that is required, the definition was operationalized in three ways to designate different amounts of discrepancy.

Definition 2 specifying a difference of 15 or more points between a student's WISC-R Full-Scale IQ and at least one of the achievement scores for WJ Mathematics, WJ Written Language, PIAT Mathematics, PIAT Reading Recognition, or PIAT Reading Comprehension, if such a difference was found, then the student was classified as LD.

Definition 3 specifying a difference of 22 or more points between a student's WISC-R Full-Scale IQ and at least one of the achieve-

scores for W-J Mathematics, W-J Written Language, PIAT Mathematics, PIAT Reading Recognition, or PIAT Reading Comprehension; if such a difference was found, then the student was classified as LD.

<u>Definition 4</u> specified a difference of 30 or more points between a student's WISC-R Full-Scale IQ and at least one of the standard scores for W-J Mathematics, W-J Written Language, PIAT Mathematics, PIAT Reading Recognition, or PIAT Reading Comprehension; if such a difference was found, then the student was classified as LD.

<u>Definition 5</u> was the alternative to the federal formula proposed by Danielson, Ferrara, Mercer, and Trifiletti (1979). The alternative formula for determining the presence of a severe discrepancy was as follows:

$$.6\left[\frac{IQ}{300} + (CA - 5.5)\right] = SDL$$

If a student's academic achievement level was at or below the alternative SDL on at least one measure, then the student was classified as LD. Achievement grade scores for W-J Mathematics, W-J Written Language, PIAT Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension were used.

<u>Definition 6</u> was the Myklebust Learning Quotient. A student who earned a learning quotient (LQ) of 89 or below in one or more areas was classified as LD according to the following formula:

$$LQ = \frac{\text{Achievement-age score}}{\text{Expectancy age}} \times 100$$

Achievement, measured by W-J Mathematics and Written Language clusters and PIAT Mathematics, Reading Recognition, and Reading Comprehension subtests, was compared to expectancy based upon the average of the

child's mental age (derived from WISC-R IQ), chronological age, and grade-placement age.

Grade placement-achievement discrepancy (low achievement). Four forms of grade placement-achievement discrepancy definitions were used.

Definition 7 specified that at least one of a student's standard scores on W-J Reading, W-J Mathematics, PIAT Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension was at or below 85; if this score was found, the student was classified as LD.

Definition 8 specified that at least one of a student's standard scores on W-J Reading, W-J Mathematics, W-J Written Language, PIAT Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension was at or below 85; if this score was found, the student was classified as LD.

Definition 9 specified that at least one of a student's standard scores for W-J Reading, W-J Mathematics, W-J Written Language, PIAT Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension was at or below 77; if this score was found, the student was classified as LD.

Definition 10 specified that at least one of a student's standard scores for W-J Reading, W-J Mathematics, W-J Written Expression, PIAT Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension was at or below 70; if this score was found, the student was classified as LD.

Scatter. Four forms of scatter definitions were used.

Definition 11 was a Verbal-Performance discrepancy of one .15

level of significance. Thus, a difference of 9 or more points between WISC-R Verbal IQ and Performance IQ indicated classification as LD.

Definition 12 was a Verbal-Performance discrepancy at the .05 level of significance. Thus, a difference of 12 or more points between WISC-R Verbal IQ and Performance IQ indicated classification as LD.

Definition 13 was a Verbal-Performance discrepancy at the .01 level of significance. Thus, a difference of 15 or more points between WISC-R Verbal IQ and Performance IQ indicated classification as LD.

Definition 14 specified a difference of 30 or more points between scaled scores on the highest and lowest WISC-R subtests; if this difference was found, then the student was classified as LD. A scaled-score range of 30 was selected since this full-scale range occurred in 1% or less of the WISC-R standardization sample.

Results

Results are presented in two general areas. First, the congruence across definitions in the numbers of students identified as LD was investigated by analyzing frequency data. Second, the correspondence between each definition and the two types of school classification was examined by determining the correlations between school classification and the definitions.

Congruence Across Definitions

The frequencies of children classified as LD are presented in Table 1. The percentage of the total sample identified by each definition ranged from 5.3 (definition 10) to 59.6 (definition 2).

with a median of 29.6.

Insert Table 1 about here

The LD group consisted of two subsamples: one group that had been identified by unknown criteria by the schools (subsample 1) and another group that met the "severe-deficit" criterion from the Woodcock-Johnson (subsample 2). Despite the fact that criteria were unspecified for half of the group and that the criterion used for the other half was different from the 14 definitions, one would still expect a considerable amount of agreement between the schools' classification and the various definitions. However, 9 of the 14 definitions did not identify even half of the students who had been classified as LD by the schools. An examination of Table 1 reveals considerable variability in the percentage of students identified as LD depending upon which definition was used. The percentages ranged from 7.3 of the LD group (definition 10) to 80.6 (definition 2), with a median of 38.6.

The non-LD group consisted of four subsamples: one group that had been referred but was declared ineligible for LD services (subsample 4) and three groups that had not been referred for psychological evaluation (subsamples 3, 5, and 6). An examination of the numbers of these students who were identified as LD according to the 14 definitions provided base-rate information on the extent to which various definitions identify non-special-education students as LD. Considering the fact that none of these students had been

identified by the schools, one would expect that few of them would be classified as LD by any of the definitions. However, as can be seen in table 1, all 14 definitions identified some of the non-LD students as LD. Although four of the definitions (1, 4, 5, and 10) identified only small percentages of non-LD students, eight of the definitions (2, 3, 6, 7, 8, 11, 12, and 13) identified approximately 25% or more; definition 2 identified 64.6% of the non-LD students.

Although these data on the percentages of non-LD students identified as LD by the various definitions provide general base-rate information, they should be viewed as tentative. The exclusionary clause in the 1976 and 1977 federal definitions (USOE, 1976, 1977) stated that students whose learning problems primarily result from visual, hearing, or motor handicaps, from mental retardation or emotional disturbance, or from environmental, cultural, or economic disadvantage could not be classified as learning disabled. Some of the students in the non-LD group who were identified by the definitions may have been excluded from classification by the schools because of information on sensory, learning, or experiential handicaps that was not available in this study. Therefore, these base rates may have been lower if information about exclusionary criteria had been available.

To test the significance of the observed differences in the total numbers of students identified by the various definitions, Cochran's Q statistic (Hays, 1973) was calculated; significant differences were indicated, $\chi^2(13) = 469.78$, $p < .001$. Some definitions were very stringent in the numbers of students they classified as LD.

Definition 5 identified only 5.5% of the total sample as LD. Similarly, definition 10 identified only 5.3% of the total sample as LD. In contrast, other definitions were more lenient. For example, definition 2 identified a large percentage of students as LD (69.6% of the total sample).

Follow-up comparisons were computed using McNemar's test of the equality of two dependent proportions (Hays, 1973). Due to the large number of follow-up tests to be performed, Bonferroni's procedure was used to guard against family-wise error (Games, 1977). Comparison of each definition with every other definition provided 91 possible contrasts. Thus, the extreme area (.05) was divided by 91 to produce a level of significance at .0005 for each comparison and .05 for the family of comparisons. Although this procedure reduces the chances of making a Type I error (i.e., rejecting the null hypothesis when it is actually true), it also increases the chances of making a Type II error (i.e., accepting the null hypothesis when it is actually false). Therefore, a second, less stringent critical value (.01) was selected for each comparison. This level of significance allowed the probability of Type I error for the family of comparisons to increase.

A summary of the significant differences between each pair of definitions is given in Table 2. A substantial number of comparisons reached significance. Of the 91 comparisons, 54 were significant at the .0005 level and an additional 12 were significant at the .01 level. Definitions 2 and 6 were the most lenient, identifying significantly larger percentages of students as LD than any of the other 12 definitions. They did not differ significantly from each

other. Definitions 1, 4, 5, and 10 were the most stringent, identifying significantly smaller percentages of students as LD than any of the other 10 definitions. There were no significant differences among them.

Insert table 2 about here

Relationship of Definitions to School Classification

The criterion for classification as LD used by the schools was unknown for half of the LD group and for one-fourth of the non-LD group. The Woodcock-Johnson severe-deficit criterion was used to identify subsamples 2 and 4 as LD or non-LD. For subsamples 1, 3, 5, and 6, it is unknown whether the schools used a single definition or some combination of definitions to classify students; further, the extent to which the schools used their criteria consistently was not known. Since we do not know the actual criteria used by the schools for half of the LD group and since we do not know how satisfactory the Woodcock-Johnson severe-deficit criterion is, the appropriateness of the schools' classification for the LD group is unclear.

For purposes of examining the relationship of the definitions to school classifications, the LD and non-LD samples were divided into two separate groups. This breakdown was performed since identification criteria used by the schools were discrepant. Thus, school classifications of subsamples 2 and 4, which were based upon the Woodcock-Johnson severe-deficit criterion, were analyzed separately from school classifications of subsamples 1, 3, 5, and 6.

which were based upon unknown criteria.

Correlations (r_t) between each type of school classification and each definition are presented in Table 3. The highest correlation (r_t = .85) occurred between unknown school criteria and definition 1. Moderately high correlations also were observed between school criteria and definitions 8 (r_t = .64), 7 (r_t = .63), 9 (r_t = .59), and 4 and 6 (r_t = .54). Negative correlations occurred between unknown school criteria and operationalizations of scatter (definitions 11-14). Thus, the unknown school criteria were associated primarily with the 1976 federal formula for ability-achievement discrepancy (definition 1) as well as with mild and moderate levels of low achievement (definitions 7-9) and other operationalizations of ability-achievement discrepancy (definitions 4 and 6). In addition, classification as LD by the unknown school criteria was associated with small rather than large amounts of scatter.

School classifications based upon the K-J severe-deficit criterion were moderately correlated with operationalizations of both ability-achievement discrepancy (definitions 1, 2, 3, and 4) and low achievement (definitions 7, 8, and 9). There was essentially no relationship between the K-J criterion and operationalizations of scatter.

In general, correlations between classifications made by the definitions and classifications made on the basis of unknown school criteria were higher than correlations between definitions and the K-J severe-deficit criterion.

Discussion

Previous research in the field of learning disabilities reveals that the criteria used to define the problem are both ambiguous and contradictory (Adelman, 1979; Vaughan & Hodges, 1973). Variability in definitions is likely to produce differences in the numbers of students who are identified. The results of this study clearly indicate that various definitions of learning disabilities produce significant differences in the total number of students identified. Similar results were obtained by Ysseldyke, Algozzine, and Epps (in press) with high-school students. In the present research, severe definitions of low achievement and ability-achievement discrepancy identified small percentages of students. In contrast, mild definitions of ability-achievement discrepancy, and to a lesser extent, mild definitions of low achievement and Verbal-Performance discrepancy, identified considerably larger percentages of students as LD.

The lack of agreement on how to define learning disabilities has had a significant impact on both the research literature and school-classification procedures. Researchers and educational personnel have selected dissimilar samples based upon diverse definitional criteria using different psychoeducational devices. Students identified as LD in one setting are very likely to be different from those identified as LD in another setting.

Results of this investigation provide an example of how school-classification procedures vary with the locale. Despite the similarities in scores earned on aptitude and achievement measures for

subsamples 1 and 3, noticeable differences were observed in the extent to which each subgroup qualified as LD under the various definitions. Differences in the percentages of students identified were most apparent in the low-achievement definitions, although differences were also noted in definitions of ability-achievement discrepancy and Verbal-Performance discrepancy.

Disagreement about the definition of learning disabilities has been well documented. Even if we were able to reach a consensus on a definition, differences are likely to remain in the way the definition is operationalized. For example, if we assume that learning disabled students manifest a discrepancy between ability and achievement, we then have to worry about how we are going to operationalize our definition. Selection of one operational definition over another will not necessarily result in identification of the same number of students.

Results from this investigation provide a clear example of the problem. Although one would expect high correlations between the Woodcock-Johnson severe-deficit criterion and other operational definitions of ability-achievement discrepancy, the correlations were only moderate at best. The Woodcock-Johnson criterion correlated most highly (r_t = .57) with a 30-point discrepancy (definition 4). It also correlated moderately well with the 1976 federal formula for discrepancy (r_t = .47) and with 10 and 20-point discrepancies (r_t = .41). However, there was a zero correlation with the alternate discrepancy formula (definition 5) and a negative correlation (r_t = -.14) with Myklebust's Learning Quotient. The use of ability-

achievement discrepancy criteria results in a situation in which identification as LD is a function not only of pupil characteristics, but also of the formulas used as well as the specific tests used to derive the scores that are input into the formula. A discrepancy apparent using one group of tests, such as the Woodcock-Johnson aptitude and achievement tests, is not always generalizable to other instruments.

Another illustration of problems associated with attempts to operationalize a definition involves the low-achievement definitions. Definitions 7 and 8 both reflect mild degrees of low achievement. Definition 7 includes five subtests; definition 8 includes these same subtests plus an additional one. Thus, these definitions are almost identical. They were in agreement that 46 students are LD and that 67 are non-LD. Despite the considerable overlap in the two, they disagreed on the classification of 18 students. This discrepancy points out the fact that students could either be labeled LD or denied LD services simply as a function of a single subtest.

Additional complications are encountered when attempts are made to operationalize the definitions. Not only are there differences among operationalizations of a single definition due to the use of different tests, but results also may be differentially biased depending on the match between the curriculum and test (see Jenkins & Pany, 1978). Operationalizations of definitions also are influenced by the amount of decision making required of diagnostic personnel. For example, some professionals will compute estimated true scores and confidence intervals rather than rely on obtained scores. Such a

practice will certainly influence classification decisions, particularly when tests having low reliability are used (see Salvia & Ysseldyke, 1981).

None of the definitions was in high agreement with the schools in the identification of students as LD or non-LD. Further, approximately 18% of the school-identified LD children were not identified by more than one definition.[1] An optimistic interpretation of this apparent inconsistency assumes that the schools were not operating on a capricious basis, and that other types of information, beyond psychometric data, entered into their classification decisions.

There are several examples of additional factors that may influence classification decisions. First, direct observational data on a student's behavior (e.g., disruptive behavior), actual classroom work, and information from criterion-referenced tests might be considered. Second, the team decision-making process may contribute to the final classification decision. Ysseldyke, Algozzine, Richey, and Graden (1982) presented data suggesting that placement-team eligibility decisions were made on some basis other than definitional criteria in common use. Third, certain practical constraints, such as whether or not there is an LD program at the student's school, might be a factor. Fourth, naturally occurring characteristics of the students (such as sex, socioeconomic status, physical appearance, and race) apparently enter into the decision-making process (see Ysseldyke & Algozzine, 1979, for a review). In the present study, no data were available on the extent to which these possibilities influenced school decision making.

There are several limitations apparent in the present investigation. First, no exclusionary data were available. As a result, frequencies of non-LD students identified by each definition may have been somewhat inflated. In an independent replication of the study using such information, different numbers of students might be identified by each definition. Thus, instead of the greatest number of students being identified by a mild degree of ability-achievement discrepancy (as found in this study), a definition reflecting mild low achievement might identify the most.

Second, students in the present study were classified as LD when any data in the complete battery of tests allowed their classification under each definition. However, it was possible that all the remaining data would not allow classification as LD. Thus, a liberal bias may have entered into the results. No data were available concerning the extent to which school practices conformed to or deviated from the practice used in this study. Furthermore, no attempt was made to value differentially the quality of information (i.e., to regard data from technically adequate tests more highly). Operational definitions of ability-achievement discrepancy and low achievement in the present study used subtests, such as those on the PIAT, that were not sufficiently reliable to make classification decisions. Although such a procedure is clearly inappropriate (since upon retesting, the student is likely to obtain a markedly different score), it does reflect common practices (see Thurlow & Yoselcyke, 1979; Yoselcyke, Algozzine, Regan, & Potter, 1980).

Third, the format of this study necessitated a test-centered

approach that did not allow for decision making by a multidisciplinary team. Federal guidelines require that an evaluation of a student be made by a multidisciplinary team.

Within the limitations of the present study, the prognosis is for continued confusion in the field of learning disabilities. As it is presently conceptualized, the category of "learning disabilities" is an ill-defined disorder with little consistency among definitions to allow for reliable prediction of LD classification. A student may or may not be classified depending on which definition is selected, how it is operationalized, the idiosyncratic approach to assessment by the diagnostician, the degree of curriculum bias, and the extent to which information on exclusionary criteria is used.

If the results of this investigation are replicated, there will be increasing evidence that at least three types of LD definitions, i.e., ability-achievement discrepancy, low achievement, and scatter, do not lead to generalizable operational definitions. The generality of the concept of learning disabilities, as it is presently defined, is brought into question. If the concept is not generalizable, there are profound implications for the educational system as well as for public policy.

Implications and Recommendations

Considering the extreme variability in the percentage of students classified as LD depending on which definition is used, clear implications are apparent for school administrators who are concerned with economic as well as educational considerations. If funds are limited, they may want to use a stringent definition, namely, one that

identify a small percentage of students. Thus, a school district might decide to adopt a definition that requires a student to have very low achievement or very large ability-achievement discrepancy. Similarly, if funds are more readily available, the school district may vote to adopt a more lenient definition, namely, one that identifies a greater percentage of students. Thus, a definition that requires a student to have only mild ability-achievement discrepancy, mild low achievement, or mild scatter might be implemented. As a result, then, a school district can change its definition of learning disabilities whenever the need arises (e.g., whenever funds are tightened). In fact, school districts and governmental agencies do so now.

The greater that administrators will have to consider, however, is that regardless of the definition selected, there is a high probability that at least some students could be classified who are not in need of special services. Thus, they may want to obtain better information on the use of a particular definition in their area or require that the student meet additional criteria before being declared eligible for LD services.

The overwhelming complexity of operationalizing definitions of learning disabilities, in addition to the added problems involving reliability and validity issues (e.g., curriculum bias) could not be discussed lightly. Given the current state of affairs, there is considerable doubt that school personnel can accurately and reliably identify such students. We can arbitrarily include or exclude students simply by adopting one definition over another or by varying

the way we operationalize the definition.

One thing is certain given the current state of definitional confusion. Another definition of learning disabilities (e.g., Hammill, Leigh, McNutt, & Larsen, 1981) or an overly sophisticated method of operationalizing a definition (e.g., Cone & Wilson, 1981) is not needed. Educational personnel should not continue to tolerate inconsistent and methodologically unsound definitions or attempt to create more and more inadequate definitions. What is needed to produce an effective educational system is the development of a conceptual framework that permits the assessment of students on educationally relevant variables. Current traditional methods of evaluating pupils for purposes of classification provide us with little information to guide our intervention efforts. Educators need to avoid crude and global classifications and to concentrate instead on assessments of students that are meaningful for instructional purposes. Knowledge of IQ or neurological status, although important at times, does not always provide relevant information for establishing appropriate instructional goals.

In summary, a simplified, more pragmatic approach is necessary. We need to get ourselves out of the definitional quagmire and get on with the business of teaching students. From the beginning of the referral process, then, data should be collected that will be useful for program planning. Considerably less time should be spent on attempts to identify students for eligibility in various special-education categories. An alternative approach is to view students within a behavioral rather than a categorical framework. The

behavioral system provides multiple-behavior samples (i.e., repeated measurements) rather than single samples (i.e., pretests and posttests) of a student's behavior in the classroom, and thus is far more likely to be representative of the student's "true" performance. Lahey, Vosk, and Habif (1981) provide a number of useful strategies for planning treatment approaches and for evaluating a student's progress throughout intervention (e.g., continual assessment of stimulus and antecedent conditions, environmental contingencies, reinforcers, and target behaviors). Such a noncategorical orientation would allow students to be grouped for instruction according to their specific academic weaknesses rather than strictly on the basis of their categorical labels.

Although the primary behavior to be assessed is the student's academic performance, the focus of attention needs to be broader than on the student alone. Situational variables need to be considered when a student is referred. Many students are "handicapped" only in situations that do not accommodate their needs. Thus, a more thorough analysis would include an examination of the student's teacher(s), his/her peers, and the educational content and method of instruction used in the student's classes (Ysseldyke, 1981). This broader ecological framework, which includes school and family variables, requires the delineation of new approaches to conceptualizing and intervening on the limited academic progress made by some students.

As changes occur in providing special-education services to students, allocation of funds is likely to be problematic. In many states, special-education funds are allocated on a categorical basis.

and are available only when specific students have been labeled and placed into specialized programs other than the regular classroom. Thus, if schools are to revise current procedures, major changes are necessary in both legislation and regulations. Reynolds and Wang (1983) have offered some promising alternatives. They suggested that federal guidelines be reduced to allow local school districts flexibility in attempts to make structural changes in their organizational patterns. Instead of receiving financial support when pupils are classified into various categories, schools would receive funds for demonstrating their effectiveness in preventing and solving problems. In other words, money would be directed toward personnel and programmatic units rather than toward categorical units.

Considering that a substantial amount of research in the area of learning disabilities has demonstrated conceptual and methodological problems afflicting the category, a different approach is necessary. Future research should begin to examine the various alternatives to the present classification system. It will be more profitable to demonstrate what <u>should</u> be done rather than to focus on what ought not to be done. Researchers and educational personnel alike face a formidable challenge.

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Footnote

[1]There were 34 school-identified LD students for whom there were complete data. Of these 34, 2 (5.9%) were not identified by any of the 14 definitions; 4 (11.8%) were identified by only 1 definition. Together, 17.6% were not identified by more than one definition.

Table 1

Frequencies and Percentages of Students Classified as LD By Each of 14 Definitions, by LD and Non-LD Groups[a]

Definitions	Groups LD	Non-LD	Total
1	12/48 (25.0)	3/90 (4.4)	15/138 (10.9)
2	29/36 (80.6)	51/79 (64.6)	80/115 (69.6)
3	18/36 (50.0)	24/79 (30.4)	42/115 (36.5)
4	6/36 (16.7)	3/79 (3.8)	9/115 (7.8)
5	4/48 (8.3)	3/90 (3.3)	7/138 (5.5)
6	32/48 (66.7)	45/90 (50.0)	77/138 (55.8)
7	29/41 (70.7)	27/91 (29.7)	56/132 (42.4)
8	32/41 (78.0)	32/91 (35.2)	64/132 (48.5)
9	14/41 (34.1)	8/91 (8.8)	22/132 (16.7)
10	3/41 (7.3)	4/91 (4.4)	7/132 (5.3)
11	22/48 (45.8)	47/96 (49.0)	69/144 (47.9)
12	13/48 (27.1)	37/96 (38.5)	50/144 (34.7)
13	11/48 (22.9)	24/96 (25.0)	35/144 (24.3)
14	8/46) (17.4)	21/95 (22.1)	29/141 (20.6)

[a]The numerator is the number of students classified as LD. The denominator is the total number of cases less those for which there are missing data. The ratio of these two numbers, in parentheses, indicates the percentage of students classified as LD.

Table 2

Pattern of Significant Differences Among Frequencies of Children Identified as L.D. by 14 Definitions

Definitions	10 (5.3)[a]	5 (5.5)	4 (7.8)	1 (10.9)	9 (16.7)	14 (20.6)	13 (24.3)	12 (34.7)	3 (36.5)	7 (42.4)	11 (47.9)	8 (48.5)	6 (55.8)	2 (69.2)
10					**	*	**	**	**	**	**	**	**	**
5					**	**	**	**	**	**	**	**	**	**
4							**	**	**	**	**	**	**	**
1							*	**	**	**	**	**	**	**
9								*	*	**	**	**	**	**
14								*	*	**	**	**	**	**
13								**		*	**	**	**	**
12											**		*	**
3													**	**
7													*	**
11														*
8													*	*
6														
2														

[a]Numbers in parentheses are percentages of children identified as learning disabled according to each definition.

*p < .01

**p < .0005

Table 3

Tetrachoric Correlations Between Each Group of School Classification and 14 Definitions of Learning Disabilities

Definition	Unknown Criteria	W-J Severe Deficit
1	.85	.47
2	.29	.41
3	.32	.41
4	.54	.57
5	.39	.03
6	.54	-.14
7	.63	.44
8	.64	.51
9	.59	.46
10	.16	.07
11	-.13	.07
12	-.43	.09
13	-.20	.05
14	-.15	.00

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